What is claimed is:

1. A handheld tattooing apparatus, comprising;

a frame, a portion of which is constructed of magnetic material,

a plurality of electrical coils, each coil having a core, each core having a rectilinear cross-section, each core having means for attachment to said frame in a position adjacent to said magnetic material, each coil being wound with electrical conducting wire,

an electrical power supply connected to said electrical conducting wire, said electrical power supply being capable of providing electrical power to said coils,

an armature bar having a rectilinear cross-section and connected to said frame, said armature bar being located in a first position in proximity of the ends of said cores opposite said means for attachment with said frame, said armature bar being spring-biased away from said cores, said armature bar being attracted to said cores when said power supply provides electrical power to said coils,

one said core having a change in one of its cross-sectional dimensions at near its end closest to said armature bar,

means for disconnecting said electrical power when said armature bar has moved to a second position, and reconnecting said electrical power when armature bar has returned to said first position, said second position being closer to said cores than said first position,

a tattoo needle attached to said armature bar, said tattoo needle moving with the motion of said armature bar.

2. A handheld tattoo apparatus, according to claim 1, further comprising:

means for aligning said rectilinear cross-section of said core rotationally with the attachment surface of said connector bar.

3. A handheld tattoo apparatus, according to claim 2, wherein said means for aligning is a pin and mating hole.

4. A handheld tattoo apparatus, according to claim 1, wherein said change to said cross-sectional dimension is an increase to a larger dimension.

5. A handheld tattoo apparatus, according to claim 1, wherein said change to said cross-sectional dimension is a decrease to a smaller dimension.

6. A handheld tattoo apparatus, according to claim 1, further comprising a change in the second cross-sectional dimension at said core end closest to said armature bar.

7. An electromagnet, comprising;

a connecting bar, constructed of magnetic material and having a rectilinear cross-section,

a plurality of electrical coils, each coil having a core, each core having a rectilinear cross-section, each core having means for attachment to said connector bar, each coil being wound with electrical conducting wire,

an armature bar having a rectilinear cross-section, said armature bar being located in a first position in proximity of the ends of said cores opposite said means for attachment with said connector bar, said armature bar being spring-biased away from said cores, said armature bar being attracted to said cores when electrical power is applied to said coils,

one said core having a change in one cross-sectional dimension at its end closest to said armature.

8. An electromagnet according to claim 7, comprising;

means for aligning said rectilinear cross-section of said core rotationally with the attachment surface of said connector bar.

9. An electromagnet according to claim 8, wherein said means for aligning is a pin and a mating hole.

10. An electromagnet, according to claim 7, wherein said change to said cross-sectional dimension is an increase to a larger dimension.

11. An electromagnet, according to claim 7, wherein said change to said cross-sectional dimension is a decrease to a smaller dimension.

12. An electromagnet, according to claim 7, further comprising a change in the second cross-sectional dimension at said core end closest to said armature bar.